



Institute for Environment and Sanitation Studies

UG.IESS.IB.015

May 2012

The Effects of Volta Floods on Volta Lake Shore Communities

Sub-Saharan Africa was well known for severe droughts especially in the 1970s and 1980s (Nicholson, 2001). However, within the past decade, much of the region particularly West Africa has been the scene of devastating annual floods that had caused damage to life and property (Paeth *et al.*, 2010). Within the Volta Basin in Ghana, record floods were experienced in 2007, 2009 and 2010 as a result of heavy precipitation in the savannah regions, exacerbated by influx of spill waters from the Bagre dam of Burkina Faso. Possible anthropogenic activities leading to increased flood risk include river regulation measures, intensified land use and forestry, and emissions of greenhouse gases causing a change in the global climate (Bronstert, 2003). Several climate change projections have suggested that rainfall intensity in these areas would increase though overall rainfall duration may decrease and seasonality may change (Kunstmann *et al.*, 2006). This gives cause for concern as studies have shown that poor rural communities are usually more susceptible to impacts of climate variability and flooding as a result of socio-economic problems that make them less able to cope, adjust or adapt (Wisner *et al.* 2004). In Ghana incidence of poverty persists in rural areas especially in 'rural savannah areas' (Coulombe and McKay, 2004), much of which constitutes the Volta Basin (Fig. 1).

This study examined the effects of 2010 floods on communities of the Volta Basin, with data from the National Disaster Management Organization (NADMO), on-site inspection and informal interviews with affected residents of the basin.

Fig. 1. Map of the Volta Basin



The results indicate that an unusual rainfall receipt in 2010 was the major cause of the flooding in the basin. Other predisposing factors included:

- the low lying and flat nature of the terrain along the banks of the Volta Lake;
- underlying lateritic concretions beneath the soils in most parts of the savannah region of Ghana which reduces water percolation and increases run-off;
- devegetation along the banks of the lake as a result of over-grazing, bad farming practices charcoal production and bush fires, with its attendant effects of run-offs; and
- high prevalence of poverty, which is one of the root causes of environmental degradation.

The opening of the spill ways of the Bagre dam by the management of SONABEL, power utility in Burkina Faso was the most cited reason by residents for the flooding.

Effects of Flooding on Lakeshore Communities.

The flooding brought along its wake both problems and

Field investigations revealed that the floods affected all the districts located within the fringes of the Volta Lake. At Buipe in the Central Gonja district of the Northern Region, flood waters inundated homes, public toilet facilities and high tension electric pylons. On the whole, over 25,000 people, mostly women and children, were displaced in the district, and 3,234 houses, including 50 school buildings either collapsed or were submerged. In addition, more than 23,588 acres of farmlands were flooded while a large number of livestock perished. At Yeji in the Brong Ahafo Region, an on-going Small Towns Water Supply System (STWSS) aimed at increasing access to potable water and improved sanitation in the beneficiary communities was completely destroyed. The project which had just commenced before the inundation was designed to cover the period 2010 to 2016. In addition, a recreational as shown in the picture below was completely inundated.



Inundation of recreational facility at Yeji Port.

Records at NADMO outfit also revealed that a total of 33,897 people were affected in the Volta Region spanning twelve districts. In addition, 1,707 houses were destroyed and 6,752.5 acres of farms inundated. At Dambai in the East Krachie District, individual shops located close to the lake were flooded to roof level. In total, about 104 communities were affected by the flooding in that district. Market structures and stalls were also seriously inundated at Tapa Abotoase in the Biakoye district.

Most of the residents interviewed acknowledged that the Volta River Authority (VRA) has a buffer zone of areas prohibited from human habitation, which they had ignored. They noted that the magnitude of the flooding was the first in their living memory, which attests to the reality of climate as widely documented.

It should be admitted that the timely intervention of state agencies including NADMO and district assemblies averted disease outbreaks in the aftermath of the flooding.

Opportunities and way Forward

Construction of a hydro-electric dam near Pwalugu in the Talensi-Nabdam District of Upper East Region to serve as reservoir for the spill waters from the Bagre has been advocated. The flooding also created immense opportunities for fishing activities in subsequent months after the flooding, which tended to offset the flood-related loss incurred by fisher folks.

References and Further Reading

- Armah, F. A., Yawson, D. O., Yengo, G. T., Odoi, J. O. and Afrifa, E. K. A. (2010) Impact of floods on livelihoods and vulnerability of natural resource dependent communities in Northern Ghana. *Water* 2, 120-139;
- Bronstert, A., (2003). Floods and climate change: Interactions and impacts. *Risk Analysis*, Vol. 23, No. 3, pp. 545-557
- Coulombe, H. and McKay A. (2004). "Selective poverty reduction in a slow growth environment: Ghana in the 1990s", Mimeo. Paper presented at ISSER-Cornell International Conference on "Ghana at the Half Century", Accra,.
- Harald Kunstmann, H., Jung, G., Wagner, S., Clotey, H. (2007). Integration of atmospheric sciences and hydrology for the development of decision support systems in sustainable water management. *Science Direct. Physics and Chemistry of the Earth* 33 (2008) 165-174
- Nicholson S. E. (2001). Climatic and environmental change in Africa during the last two centuries. *Climate Research* 17: 123-144.

The Information Briefs series of the Institute for Environment and Sanitation Studies presents topical and emerging issues central to its mandate in simple, non-technical language in order to contribute to the general understanding of science and outreach. For more detailed information on any topic in the series: please contact the IESS below:

Institute for Environment and Sanitation Studies (IESS), University of Ghana, P.O. Box LG 209, Legon, Accra, GHANA
Tel: + 233 302 962 720 (Secretariat)
Tel: + 233 302 512 819 Fax: + 233 302 512 681
e-mail: infoiess@ug.edu.gh

The Mission of IESS, University of Ghana is: "To meet the nation's needs for broad-based education, training and research in the science, policy and management of environmental and sanitation processes in the wider African and global context."

UG IESS—Established 2010

